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PALEONTOLOGY.—*On two previously unreported selachians from the Upper Cretaceous of North America.*<sup>1</sup> DAVID H. DUNKLE, U. S. National Museum. (Communicated by C. LEWIS GAZIN.)

Recently, the U. S. Geological Survey transferred to the National Museum two interesting toothlike fossils obtained by Dr. L. W. Stephenson during the course of his prolonged geological investigations on the Cretaceous formations of Texas. These specimens have proved to be examples of the structures currently interpreted as rostral teeth of pristid sharks. They are assignable to the genera *Onchopristis* Stromer and *Schizorhiza* Weiler, both of which were founded on materials from various upper Cretaceous horizons and localities in North Africa. In the Western Hemisphere, *Onchopristis* has not heretofore been known and *Schizorhiza* only from a single, doubtful report from the upper Senonian of Chile (Wetzel, 1930; and Weiler, 1930).

The definitive record of the fossil Pristidae in North America is confined to the isolated rostral armament of *Pristis* from the Cretaceous and a number of Tertiary horizons. In addition, during recent years the problematical genus *Ischyrrhiza* has been included here. In the Eastern Hemisphere no less than 12 genera of fossil pristids are recognized. The majority of these are founded on isolated rostral teeth and their assignment to the family Pristidae, oftentimes doubtfully, has been based on the nature of their insertion onto the rostral cartilages as shown by gross morphological features and by histological considerations.

The present two specimens can not lend themselves to histological preparation without destruction, and little of general morphological and systematic information can be deduced from them. However, the new occurrences in essential stratigraphic contemporaneity with their North African genotypes seems of sufficient interest to warrant the following brief description.

The illustrations accompanying this note have been prepared by Mrs. Elinor Stromberg, scientific illustrator of the U. S. Geological Survey.

#### *Onchopristis* cf. *numidus* (Haug)

A single unassociated tooth (U.S.N.M. no. 17088), although with only one side exposed and lacking the distal extremity, exhibits well the characteristics of the genus as defined by Stromer (1917).

The structure is strongly compressed, dorsoventrally, and is composed of a short inserted base and an exposed, enamel-covered crown. The line of demarcation between these two parts is prominent, being remarked by a constriction of the base adjacent to the proximal limit of the enamel. This latter shows a border arched in gentle convexity toward the base and extended obliquely across the long axis of the element. The preserved portion of the crown possesses one posterior barb. Both anterior and posterior margins of the crown form sharp cutting edges except at the proximal reentrance of the barb where the edge is bluntly rounded. The enamel on the slightly convex, exposed surface of the tooth is checked both

<sup>1</sup> Published by permission of the Secretary of the Smithsonian Institution. Received January 30, 1948.

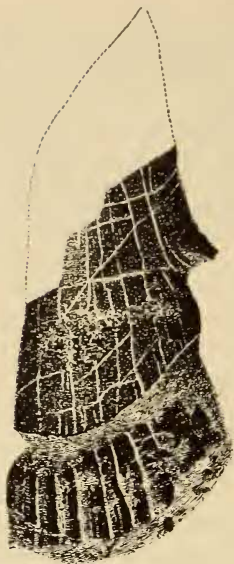
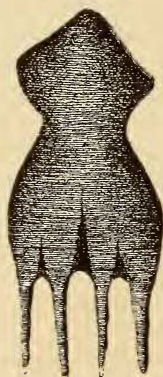


FIG. 1.—*Onchopristis* cf. *numidus* (Haug) (U.S.N.M. no. 17088). Rostral tooth from the Woodbine formation of Texas. Approx.  $\times 4$ .

longitudinally and transversely as a result of weathering but exhibits no observable ornamentation. The base, in dorsoventral aspect, is expanded and is marked by a few regularly spaced furrows, which are extended in the direction of the longest axis of the tooth.

Measured in relation to the longest axis, the specimen has the following dimensions: Total preserved length, 13.7 mm; greatest length of base, 4.5 mm; maximum width of base, 8.4 mm; width of crown immediately below barb, 6.0 mm; and greatest thickness of crown on fractured distal exposure, 2.4 mm.

A



B

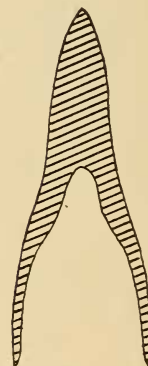


FIG. 2.—*Schizorhiza* cf. *weileri* Serra (U.S.N.M. no. 17087). Rostral tooth from the Escondido formation of Texas in (A) dorsoventral aspect as restored from a cast of the preserved impression and in (B) ideal transverse section. Approx.  $\times 4$ .

*Remarks.*—The systematic history of *Onchopristis numidus* (Haug) has been completely summarized by Stromer (1917). The present example from Texas differs from the North African specimens in the shortness of that portion of the enameled crown proximal to the barb. Stromer (1917, 1925, and 1927), however, in his discussions on this sawfish, has demonstrated wide variation between individual rostral teeth and has described examples with multiple posterior barbs. In consequence there seems to be no immediate basis for erecting additional species within the genus.

*Geological horizon and locality.*—Collected from the Upper Cretaceous (Cenomanian) in the Lewisville member of the Woodbine formation, approximately 2.4 miles southwest of Lewisville, Denton County, Tex., by L. W. Stephenson, October 25, 1945.

*Distribution.*—All the North African occurrences of *Onchopristis* are considered by Stromer to be of Cenomanian Age.

#### *Schizorhiza* cf. *weileri* Serra

To this form is assigned a small imperfectly preserved tooth (U.S.N.M. no. 17087). The complete outline of one side of the specimen is clearly impressed in the limy sandstone matrix, although almost all the tooth tissue from that side has been lost. The opposite side of the tooth is deeply imbedded in the matrix of the counterpart. As thus incompletely exposed it was necessary to crack the counterpart in two and examine the cross section of the imbedded part before any structural interpretation could be made.

It is assumed that this tooth projected laterally from firm attachment along the edge of a rostrum. In orientation, therefore, the long axis of the tooth is a transverse dimension, and this breadth exceeds the shorter length by about three times. The element is moderately compressed, dorsoventrally, and the top and bottom halves are apparently symmetrical. The crown occupies approximately one-third the longest axial dimension, and from the shiny smoothness of its impression is indicated to have been enamelled. It projects directly out in the frontal plane of the tooth without dorsad or ventrad flexure; is arched very slightly toward the rear; and is basally emarginated at the anterior and posterior edges. The free lateral margins are sharp, straight, and converge to an obtuse distal point. The root, viewed either dorsally or ventrally, is seen to expand proximally from a narrow distal neck. The part is divided into flat upper and lower lips by a frontal groove which extends outward nearly to the base of the crown. Three furrows traverse the outer surfaces of both upper and lower lips, parallel to the long axis of the element. These grooves are continued proximally as deep notches in the inner edges of the root lips. Thus, mesially, the lips are each produced into four acutely conical projections, of which the central two are the longest.

Measured in relation to the longest axis, the tooth possesses the following dimensions: Total length 15.0 mm; length of crown, 4.0 mm; maximum width of crown, 5.0 mm; maximum width of root, 6.0 mm; length of longer proximal rays, 5.5 mm; and depth of proximal divergence of root lips, 6 mm.

*Remarks.*—The genus *Schizorhiza* is known only from isolated teeth and the genotype is the species *stromeri* (Weiler, 1930). In addition to some Egyptian specimens, Weiler included in his original description a number of fragmentary teeth from several widely scattered localities (Di Stephano, 1919; Quaas, 1902; and Wetzell, 1930). This type series presented a range of structural variation from teeth as here described to examples which in gross features appear similar to *Ischyrhiza*, with long tapering, scimiterlike crowns and robust roots exhibiting only a shallow frontal groove. Apparently no one specimen among those was designated the type. Subsequently, Serra (1933) abandoned the name *stromeri* for all of

the teeth of the type series except that pictured by Weiler in his Fig. 1a, Pl. II. In return, the specific name *weileri* was proposed for the tooth illustrated as Fig. 3a, Pl. II, and a collection of identical specimens from Sofeggin, Tripolitania.

Of these two species, the present Texas specimen is more closely comparable with *weileri*. It differs from it only in the more pronounced asymmetry of the crown profile in dorsoventral aspect and in exhibiting a greater size than reported by Serra. Provisional assignment to the latter species is therefore made. While possibly representing a new species, it does not seem advisable to establish a type on this, an incomplete tooth heretofore unrecorded from North America. A more critical evaluation will depend upon the acquisition of a series of the Texas specimens which permit qualitative studies and histological examination.

*Geological horizon and locality.*—Collected from the Upper Cretaceous (Maestrichtian) in the Escondido formation, 2 miles east of Eagle Pass, Maverick County, Tex., by L. W. Stephenson, October 30, 1912.

*Distribution.*—Weiler (1930) gave a Senonian Age to all the teeth from North Africa, Arabia, and Chile on which he based his definition of *Schizorhiza stromeri* (*sensu lato*). Serra (1933) considered the occurrence of *S. weileri* as Maestrichtian.

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ENTOMOLOGY.—*Synoptic revision of the United States scarab beetles of the subfamily Dynastinae, No. 4: Tribes Oryctini (part), Dynastini, and Phileurini.*<sup>1</sup>

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This paper is the fourth in the series of my United States dynastine scarab beetle studies and completes the specific listings and notes. The fifth, and last, part will include a complete classification of the tribes and genera, from the Nearctic standpoint.

Genus *Aphonus* LeConte

*Aphonus* LeConte, 1856, p. 21; Horn, 1882, p. 122; LeConte and Horn, 1883, p. 259; Casey, 1915, pp. 178, 210; Ritcher, 1944, p. 28; Cartwright, 1944, p. 36.

*Podalgus* (part) Burmeister, 1847, p. 117; Lacordaire, 1856, p. 408.

*Aphonus* (as now constituted) is limited to the Eastern United States and contains four valid species; the farthest west I have knowledge of the genus occurring is Texas, where *brevicruris* Cartwright was collected.

The only character separating the adults of *Aphonus* from United States species of *Cheiroplatys* Hope is the trilobed (varying to subtridentate to even simply carinate in worn examples) preapical carina of the clypeus. In the larvae, Ritcher has pointed out (1944) the very close similarity between *Cheiroplatys pyriformis* LeConte and *Aphonus castaneus* (Melsheimer), the only real difference being that the first antennal segment in the latter is bare of setae, and the other two key characters being those of degree only (relative distance between lobes of the thoracic spiracle, respiratory plate, and width of the head capsule). In the adults, the peculiar preapical carina and the rather odd apical, front tibial tooth, as well as external facies and proportions in general, immediately disclose the close affinity of the two groups at present called *Aphonus* and *Cheiro-*

*platys*. Indeed, I have relatively fresh specimens of *A. castaneus* (from Massachusetts and New Hampshire) in which the preapical clypeal carina is distinctly *bidentate*, so that the only character for the retention of the name *Aphonus* as a valid genus is gone.

However, even though I feel that *Aphonus* must eventually be considered a synonym of the earlier described *Cheiroplatys* I am unable definitely to synonymize the two genera until I can review the genotypes; I desire also to dissect carefully the mouthparts of many of the Neotropical and Australian forms of the genus.

The sexes of *Aphonus* are rather similar in most characters, but in the male the last abdominal sternite is shorter and is feebly but distinctly emarginate apically, whereas the last abdominal in the female is longer and the apex is evenly rounded.

I have been unable to construct a satisfactory key to the species based on nonvariable external differences, so that to place the species properly it is necessary to make genital dissections. The only general statement that can be made as to the external facies is that *castaneus* is most frequently rufous, averages 10 to 11 mm in length, and is more robust; whereas *densicauda* and *tridentata* are both more elongate, and the former averages 13 mm in length and the latter 15 mm. Obviously, such generalities are interesting but of little assistance in actually separating closely allied and variable species. According to Cartwright's description of *brevicruris* (the unique type of which I have not seen) the proportions of the heavy, short tibia and femora will readily separate this species from all other described forms.

<sup>1</sup> Received September 3, 1947.